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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,391	08/29/2001	Richard W. Busser	4430-26	9713
22442	7590	06/08/2004	EXAMINER CHOI, WOO H	
SHERIDAN ROSS PC 1560 BROADWAY SUITE 1200 DENVER, CO 80202			ART UNIT	PAPER NUMBER
			2186	

DATE MAILED: 06/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/942,391	Applicant(s) BUSSER ET AL.	
	Examiner Woo H. Choi	Art Unit 2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 29 August 2001.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-17 is/are rejected.
- 7) Claim(s) 4 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 August 2001 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/29/2001</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____</p> |
|--|--|

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to because of the following informalities:

Although the limitation "said predetermined number is completed" implies a completion of a write operation, it should be explicitly stated to make it clearer. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4 – 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 recites the limitation "said predetermined number". There are two predetermined numbers, write operations to a first drive and write operations to a second drive, recited prior to this limitation. It is not clear which one, or both, of the two predetermined numbers the limitation refers to.

Claims 5 – 8, are rejected for including the deficiency of the parent claim as noted above.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 – 5, 7 – 13 and 15 – 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Benhase *et al.* (US Patent No. 6,665,743, hereinafter “Benhase”).

6. With respect to claims 1 and 17, Benhase discloses a method for initializing an array of drives, comprising:

providing an array of drives (figure 1) including a first drive and a second drive (4), a controller (6) and a bus subsystem that enables communications between said controller and said array of drives (col. 6, lines 56 – 57, SCSI), each of said drives being associated with a priority and with said first drive having greater priority than said second drive (according to the specification, SCSI devices has a SCSI identifier with an assigned priority, see specification page 2, lines 12 – 14); and

causing substantially equal usage of said bus subsystem by all of said drives while performing a zero initialization of said drives (figure 3, zero initialization occurs one stripe at a time, i.e. one block per disk drive resulting in a substantially equal usage of the bus).

7. With respect to claims 9 and 12, Benhase discloses an apparatus for initializing an array of drives (figure 1), comprising:

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an array of drives for storing information (4), said array of drives including at least a first drive and a second drive with said first drive being associated with a higher priority than said second drive (col. 6, lines 56 – 57);

a bus subsystem connected to said array of drives (col. 6, lines 56 – 57); and

a controller (6) in communication with said array of drives using said bus subsystem, said controller for controlling issuance of write operations, including a first write operation and a second write operation, to said array of drives in order to initialize said drives, wherein said controller controls said first write operation to at least each of said first and second drives and controls said second write operation to at least said first and second drives and in which said second write operation is controlled to said first drive after said first write operation is controlled to said second drive and to said first drive (figure 3, zero initialization occurs one stripe at a time, so a second stripe is written after the first stripe).

8. With respect to claims 2 and 11, said causing step includes providing write operations to all said drives of said array during substantially all the time said zero initialization of said drives is being performed (col. 4, line 66 – col. 5, line 3).

9. With respect to claim 3, said causing step includes controlling utilization of said bus subsystem independently of said priority (the bus is utilized substantially equally and independent of the priority arrangement of the SCSI bus since one block is written to every disk per stripe).

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10. With respect to claim 4, said causing step includes issuing a predetermined number of at least one write operation to said first drive and a predetermined number of at least one write operation to said second drive and in which subsequent issuing of another write operation to said first drive is made after at least one of said predetermined number is completed by said second drive and said first drive (as discussed above, zero initialization occurs one stripe at a time, i.e. second stripe is written after the completion of the write operation of the first stripe).

11. With respect to claims 5 and 13, said predetermined number of at least one write operation issued to said first drive relates to one or more ranges of logical block addresses (LBAs) (the write operations to sectors relate to LBA as each sector has an LBA associated with it).

12. With respect to claims 7, 8, 15 and 16, said causing step includes checking whether a write operation for at least one of said one or more ranges of LBAs has been completed to each of said drives of said array, and issuing a write operation for a next one or more LBA ranges to be written to each of said drives of said array (figure 3, as discussed above, the write operation is done one stripe at a time, i.e.).

13. With respect to claim 10, said bus subsystem is shared substantially equally by all said drives of said array when said controller controls said first: and second write operations (see rejection of claim 1 above).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benhase in view of Masiglia (The RAID book, A Storage System Technology Handbook, 6th edition, February 1997).

Benhase discloses all of the limitations of the parent claims as discussed above. Benhase also discloses a step of issuing a write operation for every striped blocks in a logical volume. However, Benhase does not specifically disclose that a volume contains at least four striped blocks. On the other hand, Masiglia disclose a striped RAID arrangement with at least four striped blocks (page 84, figure 39).

It would have been obvious to one of ordinary skill in the art, having the teachings of Masiglia and Benhase before him at the time the invention was made, to use the stripe data mapping teachings of the RAID system of Masiglia in the RAID system of Benhase, in order to actually design and implement the storage system since Masiglia teaches all of the details of different RAID architecture that is missing in Benhase's disclosure.

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Conclusion


17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Noya (US Patent No. 6,502,169), Considine et al. (US Patent No. 6,425,053) and Stallmo et al. (US Patent No. 5,657,468) disclose other zero initialization methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Woo H. Choi whose telephone number is (703) 305-3845. The examiner can normally be reached on M-F, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (703) 305-3821. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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June 2, 2004


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